UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,644	03/20/2002	Claus Hillermeier	32860/000282/US	7432

30596 7590 11/26/2007

HARNESS, DICKEY & PIERCE, P.L.C.
P.O.BOX 8910
RESTON, VA 20195

EXAMINER	
GUILL, RUSSELL L	

ART UNIT	PAPER NUMBER
2123	

MAIL DATE	DELIVERY MODE
11/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/088,644	HILLERMEIER ET AL.	
	Examiner	Art Unit	
	Russ Guill	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4,7-15,20-25,29-32,34-36 and 40-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4,7-15,20-25,29-32,34-36 and 40-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to an Amendment filed October 10, 2007. Claims 2 - 4, 7 - 15, 20 - 25, 29 - 32, 34 - 36 and 40 - 43 are pending. Claims 2 - 4, 7 - 15, 20 - 25, 29 - 32, 34 - 36 and 40 - 43 have been examined. Claims 2 - 4, 7 - 15, 20 - 25, 29 - 32, 34 - 36 and 40 - 43 have been rejected.

2. **As previously recited, the Examiner would like to thank the Applicant for the well-presented response, which was useful in the examination process. The Examiner appreciates the effort to carefully analyze the Office Action, and make appropriate amendments.**

Response to Remarks

3. Regarding claims 1, 12 - 13 rejected under 35 U.S.C. § 112, first paragraph:

3.1. Applicant's arguments have been fully considered, but are not persuasive, as follows.

3.2. The Applicant argues:

3.3. The Examiner rejects claims 1, 12 and 13 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. Particularly, the Examiner contends:

> **3.3.1.** ...the specification does not appear to describe the complete set of limitations as in the method of claim 1. While each limitation is described in the specification, the complete process does not appear to be described. Further, the first limitation appears to be independent of the remaining limitations, which also does not appear to be described in the specification. Office Action, U.S. Pat. & Trademark Office., p. 4 (July 10, 2007).

3.4. Applicants disagree with the Examiner's statement. As the Examiner is

well-aware, there is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. *In re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976). The Examiner feels the description is insufficient; so insufficient so as to overcome this strong presumption. But, the Examiner has not satisfied the initial burden of presenting evidence or reasons why a person skilled in the art would not recognize that the written description of the invention provides support for the claims. MPEP § 2163(II)(A). Applicants respectfully submit that this is because the present application does provide sufficient support for the claims so as to comply with 35 U.S.C. § 112, first paragraph. For at least this reason, this rejection should be withdrawn.

3.4.1. The Examiner respectfully replies:

3.4.2. The Applicant's submit that the present application provides sufficient support, and for at least this reason, the rejection should be withdrawn. This appears to be simply an allegation that is not yet supported by facts, and thus, the rejection is maintained.

3.5. The Applicant argues:

3.6. In further support of the above arguments, Applicants provide the following discussion to aid the Examiner in understanding the example embodiments described in the application. The following discussion refers to paragraphs **[0021-0026]** of Applicants' Specification.

3.6.1. The Examiner respectfully replies:

3.6.2. Paragraphs [0021] - [0026] appear to be directed to multiple embodiments as shown in figures 1 - 4.

3.7. The Applicant argues:

3.8. An example embodiment is directed to a method for simulating a technical system. In this example embodiment, a set of setting parameters ($x = (x_i, x2, \ldots, x_n)^T$) are optimized (e.g., at Optimization Block 101 in FIG. 1, 2) for a required function ($f_{a,b}$ ...(x)). The required function ($f_{a,b,}$ ...(x)) is based on the set of setting parameters ($x = (x_i, x_2, \ldots x_n)^T$) and a first set of setting constants (a, b, ...). The set of setting constants (a, b,) are static during the optimizing step, and the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) are for design and reaction of the technical system (e.g., a power station).

3.8.1. The Examiner respectfully replies:

3.8.2. The recited, "the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) are for design and reaction of the technical system" does not appear to be recited in the paragraphs [0021] - [0026] of Applicant's specification. Further, while the paragraph [0023] recites that the required function is optimized, it does not recite that the setting parameters are optimized. Further, the recited paragraphs do not appear to recite that the setting constants are static during the optimizing step.

3.9. The Applicant argues:

3.10. A result (e.g., determined at 102 in FIG. 1, 2) is determined as a function of the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) and based on a request to an external source (106 in FIG. 1, 2). The result is in the form of an influence of the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) on the technical system. The result is temporarily stored (e.g., at Record file 104 in FIG. 1, 2). The technical system is simulated based on the result and the setting constants (a, b, . . .).

3.10.1. The Examiner respectfully replies:

3.10.2. First, the recited, "The technical system is simulated based on the result and the setting constants" does not appear to be recited (or performed) in the paragraphs [0021] - [0026] of Applicant's specification. In the figures 1 and 2, if the recited technical system (that is, a power plant), is simulated, it would appear to occur in figure 1, block 106, labeled a "simulator".

3.10.3. Second, as recited above, "The result is in the form of an influence of the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) on the technical system. The result is temporarily stored (e.g., at Record file 104 in FIG. 1, 2)", but this appears to conflict with paragraph [0023]. Paragraph [0023] recites, "Results from the required function evaluation 102 are preferably stored in a record file 104"; however, the "results from the required function evaluation" are results that include the setting constants, whereas the result stored in the claim is the result from the external source and does not appear to include the setting constants. Therefore, the provided explanation (and claims) appears to conflict with the specification.

3.10.4. Third, as recited above, "A result (e.g., determined at 102 in FIG. 1, 2) is determined as a function of the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) and based on a request to an external source (106 in FIG. 1, 2). The result is in the form of an influence of the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) on the technical system". The Examiner agrees that, as recited above, a result, determined at 102 in figures 1, 2, is determined as a function of the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) and based on a request to an external source (106 in FIG. 1, 2). However, the result is in the form of **both** an influence of the set of setting parameters ($x = (x_i, x_2, \ldots, x_n)^T$) on the technical system, and the influence of setting constants (see paragraph [0021]). Therefore, the provided explanation appears to conflict with the specification, or at least, omit an essential feature.

3.11. The Applicant argues:

3.12. The external source (106 in FIG. 1, 2) is checked (e.g., at 201 in FIG. 2) to determine an influence of each of a plurality of sets of setting parameters ($x = (x_1, x_2, \ldots, x_n)^T$) on the technical system, and the influences are temporarily stored (e.g., at Simulation database 202). An additional influence is determined by extrapolating using the temporarily stored results.

3.12.1. The Examiner respectfully replies:

3.12.2. As recited above, "The external source (106 in FIG. 1, 2) is checked (e.g., at 201 in FIG. 2) to determine an influence of each of a plurality of sets of setting parameters ($x = (x_1, x_2, \ldots, x_n)^T$) on the technical system", but paragraphs [0021] - [0026] do not appear to recite that the external source determines the influence of setting parameters ($x = (x_1, x_2, \ldots x_n)^T$) on the technical system, and further, paragraphs [0021] - [0026] do not appear to recite that the setting constants are not used by the external source.

3.13. The Applicant argues:

3.14. Given the aforementioned discussion and support, the claims are clearly and sufficiently disclosed in the specification so as to comply with 35 U.S.C. § 112, First Paragraph. Withdrawal of this rejection is requested.

3.14.1. The Examiner respectfully replies:

3.14.2. In summary, while the Examiner appreciates the excellent effort to explain the claims, as discussed above, the preceding arguments appear to either conflict with the specification, or appear to be invented after the original specification and claims were submitted.

4. Regarding **claims 7 and 9** rejected under 35 U.S.C. § 103:

4.1. Applicant's arguments have been fully considered, and are partly persuasive, and partly unpersuasive, as follows. However, new rejections are made below.

4.2. The Applicant argues:

4.3. Applicants have canceled claim 1 and re-written claims 7 and 9 in independent form. Therefore, Applicants will address this rejection with respect to claims 7 and 9.

4.4. In the method of claim 7, for example, a result is determined as a function of a set of setting parameters and based on a request to an external source. The result is in the form of an influence of the set of setting parameters on the technical system. The technical system is simulated based on the result and the setting constants. Afterward, the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source.

4.5. The Examiner correctly recognizes that Microsim and Optimizer fail to teach or suggest determining an "influence of each of a plurality of sets of setting parameters on the technical system," by "checking the external source," as required by claim 7, but directs Applicants' attention to column 5, lines 8 - 50 of Croix to make up for this deficiency.

4.6. Column 5, lines 8 - 50 of Croix discusses interpolating between measured responses to a preselected number of input transition times and output loads to determine additional, unmeasured responses. In other words, this portion of Croix discloses obtaining a few data points, and interpolating between the data points to obtain more data points. No influence is determined by checking an external source. In fact, Croix is silent with regard to any external source at all, and thus, all such interpolation must be

performed internally. Therefore, column 5, lines 8 - 50 do not teach or fairly suggest constitute determining an influence of each of a plurality of sets of setting parameters on the technical system "by checking the external source," as required by claim 7.

4.6.1. The Examiner respectfully replies:

4.6.2. Regarding Croix, column 5, lines 8 - 50, the Examiner respectfully asserts that the recited portions do teach the limitation. Column 5, lines 8 - 50 appears to teach using SPICE to simulate a cell's operation at characterization points and creating a characterization table with the points (especially column 5, lines 8 - 26). This appears to satisfy the limitation, as recited above, determining an "influence of each of a plurality of sets of setting parameters on the technical system," by "checking the external source," as required by claim 7, because SPICE is clearly an external source, and the characterization points are a plurality of sets of setting parameters.

4.7. The Applicant argues:

4.8. Further, the Examiner correctly recognizes that neither Microsim nor Optimizer teach or suggest determining "an additional influence," "on the basis of the temporarily stored results," as required by claim 7, but relies upon Croix to allegedly teach this feature. However, none of Croix, Microsim or Optimizer teaches or fairly suggests determining "an additional influence," using "extrapolation on the basis of the temporarily stored results," as required by claim 7.

4.9. While Croix discusses interpolating between measured responses to determine additional, unmeasured responses, Croix, is silent with regard to any "extrapolation," of these values. As the Examiner will appreciate, interpolation and extrapolation are quite different, and thus, extrapolation would not be obvious to one of ordinary skill given the teaching of interpolation in Croix.

4.10. In more detail, interpolation is a method of constructing new data points within a discrete set of known data points by curve-fitting or regression analysis, for example. Extrapolation, on the other hand, is the process of constructing new data points outside a discrete set of known data points. As the Examiner will appreciate, interpolation often produces more meaningful and certain results than extrapolation, for example. Accordingly, one of ordinary skill would not consider using extrapolation given the use of interpolation.

4.11. Moreover, both Microsim and Optimizer are silent with regard to any determining of 'an additional influence, let alone determining an additional influence using "extrapolation."

4.12. For at least the foregoing reasons, claim 7 is patentable over Microsim, Optimizer and Croix because, even in combination, the references fail to teach or suggest all features of claim 7. Claims 12 and 13 are patentable for at least reasons somewhat similar to those set forth above with regard to claim 7.

4.12.1. The Examiner respectfully replies:

4.12.2. Croix does not appear to teach extrapolation; however, a new rejection is made to meet the limitation. Please refer to new art at MicroSim, page 6-33, sixth paragraph that starts with, "The table consists . . ", the sentence, "For values of EXPR outside the table's range, the device's output is a constant with a value equal to the entry with the smallest (or largest) input", which obviously teaches extrapolation of table values outside the range of the table.

4.12.3. The argument also appears to allege that Croix does not teach, "an additional influence". Croix appears to teach the limitation in column 5, lines 8 - 50, especially lines 40 - 50, where the system determines a response to a previously unmeasured input value by interpolation. A further example is given in column 5, lines 50 - 65.

4.13. The Applicant argues:

4.14. Claim 9 recites, "the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source," and thus, is patentable for reasons at least somewhat similar to those set forth above with regard to claim 7. In addition, claim 9 is patentable for the following additional reasons.

4.14.1. The Examiner respectfully replies:

4.14.2. The recited arguments were addressed in claim 7, and are not persuasive.

4.15. The Applicant argues:

4.16. Each of Microsim, Optimizer and Croix are arguably directed to simulation methods and software, without any connection to actual experiments. Consequently, none of Microsim, Optimizer nor Croix teach or fairly suggest at least, "determining a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system, the external source being an experiment," as required by claim 9.

4.17. Moreover, because each of Microsim, Optimizer and Croix are completely dependent and reliant upon simulations, but not real world experimental data, an external source that is an experiment would not have been obvious to one of ordinary skill. For at least the foregoing reasons, claim 9 is patentable over Microsim, Optimizer and Croix because, even in combination, the references fail to teach or suggest all features of claim 9.

4.17.1. The Examiner respectfully replies:

4.17.2. First, broadly interpreted, an experiment is performed with a simulator. It was old and well known to perform experiments using a simulator. However, in order to expedite prosecution, new art is recited at MicroSim, page 6-33, third paragraph that starts with, "The ETABLE and GTABLE parts use a transfer function described by a table. These device models are well suited for use with measured data", where a device transfer function uses a table of measured data, which would obviously teach or suggest an experiment as a source. Please note that the claim does not appear to require an experiment to be performed at the time that the external source is checked; it appears that the experiment may be performed in advance and the experimental results stored for later queries. Further, in order to expedite the examination process, the art of Rai (U.S. Patent 6,606,612) also explicitly teaches an experiment as an external source. Further, it was old and well known in the art of power plant simulators to use steam tables of experimental values for calculations, as appears to be taught in the reference, "International Library of Technology", 1908, page 22.

4.18. The Applicant argues:

4.19. Claims 2-4, 10, 11, 14, 15, 20-25, 30-32, 34-36, and 41-43 are patentable at least by virtue of their dependency from claims 7, 9, 12 or 13.

4.19.1. The Examiner respectfully replies:

4.19.2. The argument is persuasive; however, as discussed above, new rejections are made of the independent claims.

5. Regarding **claims 8, 29 and 40** rejected under 35 U.S.C. § 103:

5.1. Applicant's arguments have been fully considered, but are not persuasive, as follows.

5.2. The Applicant argues:

5.3. The Examiner further rejects claims 8, 29 and 40 under 35 U.S.C. § 103(a) as unpatentable over Microsim, Croix, Optimizer and U.S. Patent No. 6,606,612 ("Rai"). Applicants traverse this rejection.

5.4. In the method of claim 8, a result is determined as a function of a set of setting parameters and based on a request to an external source. The result is in the form of an influence of the set of setting parameters on the technical system. The technical system is simulated based on the result and the setting constants. Afterward, the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source.

5.5. The Examiner correctly recognizes that Microsim and Optimizer fail to teach or suggest at least, determining an "influence of each of a plurality of sets of setting parameters on the technical system," by "checking the external source," as required by claim 8, but relies upon Croix to teach this feature. As discussed above with regard to claim 7, however, Croix also fails to teach or suggest this feature. Rai is also deficient with regard to this feature. Therefore, even if combined, the references fail to teach or suggest all features of claim 8.

5.5.1. The Examiner respectfully replies:

5.5.2. As recited above, the argument is essentially the same as the argument for claim 7, and therefore the response is the same as for claim 7, and therefore, the rejection is maintained.

5.6. The Applicant argues:

5.7. Claims 29 and 40 are patentable by virtue of their dependency from claim 12, and for at least reasons somewhat similar to those set forth above with regard to claim 8.

5.7.1. The Examiner respectfully replies:

5.7.2. Since the rejection of claim 8 is maintained, the rejections of the dependent claims are also maintained.

Specification

6. The disclosure is objected to because of the following informalities: Paragraphs [0033] and [0034] refer to "high-line plots". This appears to be an interpretation error because there does not appear to a known term of "high-line plot". Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7.1. Claims 2 - 4, 7 - 15, 20 - 25, 29 - 32, 34 - 36 and 40 - 43 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the

claimed invention. Please refer especially to the specification at paragraphs [0021] - [0026] and [0017] - [0018].

7.1.1. Regarding independent claim 7 and dependent claims, the specification does not appear to describe the complete set of limitations as in the method of claim 7. While each limitation is described in the specification, the complete process does not appear to be described. Further, the first limitation appears to be independent of the remaining limitations, which also does not appear to be described in the specification.

7.1.2. Regarding independent claims 8 - 9, 12 - 13 and dependent claims, the claims are rejected for similar reasons as in claim 7 above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order

for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 2 - 4, 7, 9 - 15, 20 - 25, 30 - 32, 34 - 36 and 41 - 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Microsim ("MicroSim Pspice A/D & Basics+", June 1997) in view of Croix (U.S. Patent No. 6,327,557), further in view of Optimizer ("MicroSim PSpice Optimizer", June 1997).

10.1.1. The art of Microsim is directed to the PSpice circuit simulation software (**page 1-2**).

10.1.2. The art of Optimizer is directed to a circuit optimization program integrated with other MicroSim programs, such as MicroSim PSpice circuit simulation (**page xiv**) described above.

10.1.3. The art of Croix is directed to building a circuit characterization cell for use in a Spice circuit simulator (**column 1, lines 1 - 65; and column 2, lines 1 - 16**). In summary, Croix describes simulating a circuit at multiple values of input parameters, and storing the resulting output values along with the input parameters in a lookup table. Croix then builds a Spice cell with the lookup table for use in a Spice simulation. During Spice simulation, the cell can simply take the input values to the cell and interpolate an output value (**column 5, lines 2-65**). This simulation process has the advantage that cells of the circuitry are characterized with higher speed relative to previous techniques.

10.1.4. The art of Microsim and the art of Croix are analogous art because they are both directed to circuit simulation using the Spice simulation software.

10.2. Regarding claim 7:

10.2.1. Microsim appears to teach:

10.2.2. A method for simulation of a technical system (*page 1-2, section "What is Pspice A/D*);

10.2.3. ~~wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and~~ an ~~additional~~ influence is determined by extrapolation on the basis of the ~~temporarily~~ stored results (*page 6-33, sixth paragraph that starts with, "The table consists . . ", the sentence, "For values of EXPR outside the table's range, the device's output is a constant with a value equal to the entry with the smallest (or largest) input", which obviously teaches extrapolation of table values outside the range of the table*).

10.2.4. Microsim does not specifically teach:

10.2.5. Optimizing a set of setting parameters for a required function, the required function being based on the set of setting parameters and a first set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system;

10.2.6. Determining a result as a function of the set of setting parameters and based on a request to an external

source, the result being in the form of an influence of the set of setting parameters on the technical system;

10.2.7. temporarily storing the result;

10.2.8. simulating the technical system based on the result and the setting constants;

10.2.9. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and an additional ~~influence is determined by extrapolation on the basis of the~~ temporarily ~~stored results~~.

10.2.10. Optimizer appears to teach:

10.2.11. Optimizing a set of setting parameters for a required function, the required function being based on the set of setting parameters and a first set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants); and pages 6-2 thru 6-4, please note that in figure 6-1 that resistor values for R1, R2, R3 are constants*);

10.2.12. Determining a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the

set of setting parameters on the technical system (*page xiv, please note that the MicroSim Pspice Optimizer calls the MicroSim Pspice A/D simulator; and page 6-2 and page 6-8, it would have been obvious that the circuit in figure 6-1 was submitted to PSpice A/D for calculating a result*);

10.2.13. simulating the technical system based on the result and the setting constants (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants)*);

10.2.14. Croix appears to teach:

10.2.15. Determining a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*column 5, lines 8 - 50*);

10.2.16. temporarily storing the result (*column 5, lines 8 - 50*);

10.2.17. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source (*column 5, lines 8 - 50*)., the result of this check is temporarily stored (*column 5, lines 8 - 50*), and an additional influence is determined ~~by extrapolation~~ on the basis of the temporarily

stored results (*column 5, lines 8 - 50, especially lines 45 - 50, column 9, lines 55-67, and column 10, lines 1-35*).

10.2.18. The motivation to use the art of Croix with the art of Microsim would have been the benefits recited in Croix that cells of the circuitry are characterized with both higher speed and higher accuracy relative to previous techniques (**column 2, lines 10-16**), which would have been recognized by the ordinary artisan as a benefit because higher speed means reduced time for simulation.

10.2.19. The motivation to use the art of Optimizer with the art of MicroSim would have been the benefit recited in Optimizer that the program improves the performance of analog circuits (**page xiv, first paragraph**). The MicroSim reference also points to the Optimizer reference (**MicroSim, pages xxvi and xxviii**).

10.2.20. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Croix and the art of Optimizer with the art of Microsim to obtain the claimed invention.

10.2.21. **Regarding claim 9:**

10.2.22. Claim 9 is taught almost entirely as in claim 7 above. The differences are taught below.

10.2.23. MicroSim appears to teach:

10.2.24. the external source being an experiment (*page 6-33, third paragraph that starts with, "The ETABLE and GTABLE parts use a transfer*

function described by a table. These device models are well suited for use with measured data", where a device transfer function uses a table of measured data, which would obviously teach or suggest an experiment as a source. Please note that the claim does not appear to require an experiment to be performed at the time that the external source is checked; it appears that the experiment may be performed in advance and the experimental results stored for later queries) .

10.2.24.1. In order to expedite the examination process, the art of Rai (U.S. Patent 6,606,612) also explicitly teaches an experiment as an external source. Further, it was old and well known in the art of power plant simulators to use steam tables of experimental values for calculations, as appears to be taught in the reference, "International Library of Technology", 1908, page 22.

10.2.25. Regarding claim 2:

10.2.26. Microsim appears to teach designing the technical system on the basis of the simulation (**page 1-2, section "What is PSpice A/D?", especially "software-based breadboard of your circuit that you can use to refine your design"**).

10.2.27. Regarding claims 3, 24 and 35:

10.2.28. Microsim appears to teach that the design process includes a change to the technical system (**page 1-2, section "What is PSpice A/D?", especially "software-based breadboard of your circuit that you can use to *refine* your design"; it would have been obvious that refining a design is a change**).

10.2.29. **Regarding claims 4, 14, 15, 25 and 36:**

10.2.30. Microsim does not specifically teach:

10.2.30.1. redetermining the influence of the parameters on the technical system by accessing the temporarily stored result.

10.2.31. Croix appears to teach:

10.2.31.1. redetermining the influence of the parameters on the technical system by accessing the temporarily stored result (**column 5, lines 65 - 67, and column 6, lines 1 - 7, and column 1, lines 10 - 67, and column 2, lines 1 - 10**).

10.2.32. **Regarding claims 20, 30 and 41:**

10.2.33. Microsim does not specifically teach that the external source is at least one of a simulator and an experiment.

10.2.34. Croix appears to teach that the external source is a simulator (**column 5, lines 8-27; the simulator Spice is used to calculate characterization values**).

10.2.35. **Regarding claims 10, 21, 31 and 42:**

10.2.36. Microsim does not specifically teach that the simulation is carried out using a plurality of results, without the external source.

10.2.37. Croix appears to teach that the simulation is carried out using a plurality of results, without the external source (**figure 9; and column 5, lines 8-27**).

10.2.38. **Regarding claims 11, 22, 32 and 43:**

10.2.39. Microsim appears to teach determining, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants (**pages 12-2 and 12-3, section Parametric Analysis; and page xiii, Chapter 13 Monte Carlo and Sensitivity/Worst-Case Analyses; and page 13-33, section Sensitivity Analysis**).

10.2.39.1. Regarding (**pages 12-2 and 12-3, section Parametric Analysis; and page xiii, Chapter 13 Monte Carlo and Sensitivity/Worst-Case Analyses; and page 13-33, section Sensitivity Analysis**); it would have been obvious to determine, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants.

10.2.40. **Regarding claim 12:**

10.2.41. Microsim appears to teach:

10.2.42. an arrangement for simulation a technical system (*page 1-2, section "What is Pspice A/D*);

10.2.43. ~~a memory adapted to temporarily store the result; wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is~~

~~temporarily stored, and~~ an ~~additional~~ influence is determined by extrapolation on the basis of the ~~temporarily~~ stored results (*page 6-33, sixth paragraph that starts with, "The table consists . . ", the sentence, "For values of EXPR outside the table's range, the device's output is a constant with a value equal to the entry with the smallest (or largest) input", which obviously teaches extrapolation of table values outside the range of the table*).

10.2.44. **Microsim does not specifically teach:**

10.2.45. A processor unit configured to, Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system;

10.2.46. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system;

10.2.47. simulate the technical system based on the result and the setting constants;

10.2.48. a memory adapted to temporarily store the result; wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and an additional ~~influence is~~

~~determined by extrapolation on the basis of the~~ temporarily ~~stored results~~.

10.2.49. Optimizer appears to teach:

10.2.50. A processor unit configured to, Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants); and pages 6-2 thru 6-4, please note that in figure 6-1 that resistor values for R1, R2, R3 are constants*);

10.2.51. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*page xiv, please note that the MicroSim Pspice Optimizer calls the MicroSim Pspice A/D simulator; and page 6-2 and page 6-8, it would have been obvious that the circuit in figure 6-1 was submitted to PSpice A/D for calculating a result*);

10.2.52. simulate the technical system based on the result and the setting constants (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants)*);

10.2.53. Croix appears to teach:

10.2.54. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*column 5, lines 8 - 50*);

10.2.55. a memory adapted to temporarily store the result (*column 5, lines 8 - 50*);

10.2.56. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source (*column 5, lines 8 - 50*)., the result of this check is temporarily stored (*column 5, lines 8 - 50*), and an additional influence is determined ~~by extrapolation~~ on the basis of the temporarily stored results (*column 5, lines 8 - 50, especially lines 45 - 50, column 9, lines 55-67, and column 10, lines 1-35*).

10.2.57. The motivation to use the art of Croix with the art of Microsim would have been the benefits recited in Croix that cells of the circuitry are characterized with both higher speed and higher accuracy relative to previous techniques (**column 2, lines 10-16**), which would have been recognized by the ordinary artisan as a benefit because higher speed means reduced time for simulation.

10.2.58. The motivation to use the art of Optimizer with the art of MicroSim would have been the benefit recited in Optimizer that the program improves the performance of analog circuits (**page xiv, first paragraph**). The MicroSim reference also points to the Optimizer reference (**MicroSim, pages xxvi and xxviii**).

10.2.59. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Croix and the art of Optimizer with the art of Microsim to obtain the claimed invention.

10.2.60. **Regarding claim 13:**

10.2.61. MicroSim appears to teach:

10.2.62. A computer program medium on which executable instructions are recorded, the executable instructions causing a processor unit to execute a process of simulating a technical system (*page 1-2, section "What is Pspice A/D*)

10.2.63. ~~wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and~~ an ~~additional~~ influence is determined by extrapolation on the basis of the ~~temporarily~~ stored results (*page 6-33, sixth paragraph that starts with, "The table consists . . ", the sentence, "For values of EXPR outside the table's range, the device's output is a constant with a value equal to the entry with the smallest (or largest) input", which obviously teaches*

extrapolation of table values outside the range of the table).

10.2.64. Microsim does not specifically teach:

10.2.65. a first program segment configured to cause the processor unit to Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a first set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system;

10.2.66. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system;

10.2.67. simulate the technical system based on the result and the setting constants;

10.2.68. a second program segment, adapted to cause the processor unit to temporarily store the result;

10.2.69. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and an additional ~~influence is determined by extrapolation on the basis of the~~ temporarily ~~stored results~~.

10.2.70. Optimizer appears to teach:

10.2.71. a first program segment configured to cause the processor unit to Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants); and pages 6-2 thru 6-4, please note that in figure 6-1 that resistor values for R1, R2, R3 are constants*);

10.2.72. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*page xiv, please note that the MicroSim Pspice Optimizer calls the MicroSim Pspice A/D simulator; and page 6-2 and page 6-8, it would have been obvious that the circuit in figure 6-1 was submitted to PSpice A/D for calculating a result*);

10.2.73. simulate the technical system based on the result and the setting constants (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants)*);

10.2.74. Croix appears to teach:

10.2.75. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*column 5, lines 8 - 50*);

10.2.76. a memory adapted to temporarily store the result (*column 5, lines 8 - 50*);

10.2.77. a first program segment configured to cause the processor unit to temporarily store the result (*column 5, lines 8 - 50*)

10.2.78. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source (*column 5, lines 8 - 50*)., the result of this check is temporarily stored (*column 5, lines 8 - 50*), and an additional influence is determined ~~by extrapolation~~ on the basis of the temporarily stored results (*column 5, lines 8 - 50, especially lines 45 - 50, column 9, lines 55-67, and column 10, lines 1-35*).

10.2.79. The motivation to use the art of Croix with the art of Microsim would have been the benefits recited in Croix that cells of the circuitry are characterized with both higher speed and higher accuracy relative to previous techniques (**column 2, lines 10-16**), which would have been recognized by the ordinary artisan as a benefit because higher speed means reduced time for simulation.

10.2.80. The motivation to use the art of Optimizer with the art of MicroSim would have been the benefit recited in Optimizer that the program improves the performance of analog circuits (**page xiv, first paragraph**). The MicroSim reference also points to the Optimizer reference (**MicroSim, pages xxvi and xxviii**).

10.2.81. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Croix and the art of Optimizer with the art of Microsim to obtain the claimed invention.

10.2.82. Regarding claims 23 and 34:

10.2.83. Microsim appears to teach that a processor unit is further adapted to design the technical system on the basis of the simulation (**page xxvi, the unlabeled figure at the bottom of the page, the MicroSim PSpice Optimizer is shown as modifying the MicroSim PspiceA/D simulator; it would have been obvious that the optimizer is adjusting values of a technical system, which is performing design; and page xxviii, MicroSim PSpice Optimizer User Guide paragraph**).

10.3. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Microsim ("MicroSim Pspice A/D & Basics+", June 1997) Croix (U.S. Patent No. 6,327,557), further in view of Optimizer ("MicroSim PSpice Optimizer", June 1997), further in view of Rai (U.S. Patent Number 6,606,612).

10.4. Please refer to claim 7 above for motivation and analogous art regarding MicroSim, Croix and Optimizer.

10.5. The art of Rai is directed to a general method of design optimization using composite surfaces with neural networks (*title and column 1, lines 25 - 30*).

10.6. The art of Rai and the art of MicroSim are analogous art because they both pertain to the art of optimizing a design (*Microsim, page xxvi, diagram at the bottom of the page, Microsim PSpice A/D is connected to an optimizer MicroSim PSpice Optimizer*).

10.7. The motivation to use the art of Rai with the art of would have been the benefit recited in Rai that significant cost savings have been realized by using neural nets to interpolate between measurements (***column 2, lines 50-55***).

10.8. Regarding **claim 8**:

10.8.1. Claim 8 is almost entirely taught as in claim 7 above. The differences are taught below.

10.8.2. Microsim does not specifically teach: an additional influence is determined on the basis of temporarily stored results using a neural network.

10.8.3. Rai appears to teach determining an influence from results using a neural network (***column 2, lines 50-55***).

10.9. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Rai and the art of Croix and the art of Optimizer with the art of Microsim to produce the claimed invention.

10.10. Claims 29 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Microsim ("MicroSim Pspice A/D & Basics+", June 1997) as modified by Croix and Optimizer as applied to **claims 2 - 4, 7, 9 - 15, 20 - 25, 30 - 32, 34 - 36 and 41 - 43** above, and further in view of Rai (U.S. Patent Number 6,606,612).

10.10.1. Microsim as modified by Croix and Optimizer teaches a method for simulation of a technical system, as recited in **claims 2 - 4, 7, 9 - 15, 20 - 25, 30 - 32, 34 - 36 and 41 - 43** above.

10.10.2. Regarding claims 29 and 40:

10.10.3. Microsim does not specifically teach that an additional influence is determined from the results using a neural network.

10.10.4. Rai appears to teach determining an influence from results using a neural network (***column 2, lines 50-55***).

10.10.5. The motivation to use the art of Rai with the art of Microsim as modified by Croix and Optimizer would have been the benefit recited in Rai that significant cost savings have been realized by using neural nets to interpolate between measurements (***column 2, lines 50-55***).

10.10.6. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Rai with the art of Microsim as modified by Croix and Optimizer to produce the claimed invention.

10.11. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Conclusion

11. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russ Guill whose telephone number is 571-272-7955. The examiner can normally be reached on Monday - Friday 10:00 AM - 6:30 PM.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Russ Guill
Examiner
Art Unit 2123

RG

PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100